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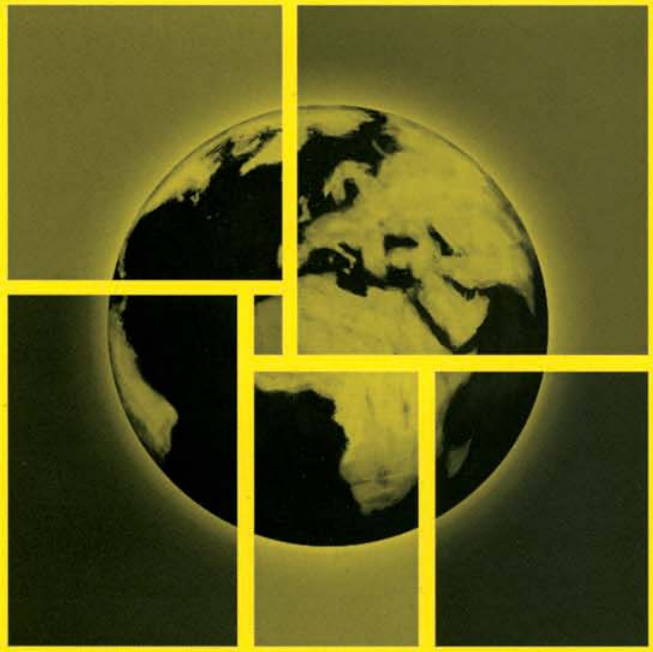
INTERACTIONS BETWEEN GLOBAL CHANGE AND HUMAN HEALTH



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SCIENTIFIC PAPERS

CLIMATE CHANGE AND HUMAN RIGHTS

WOLFGANG SACHS

Introduction

On February 16, 2005, when the Kyoto Protocol finally came into force, a long drawn-out process of consensus and institution building reached a temporary conclusion. International climate policy makers had achieved what they had been struggling over for the last century and a half. Now for the first time, despite setbacks along the way, industrial countries have a legal commitment to reduce greenhouse gas emissions. Thirteen years earlier, in May of 1992, governments had signed the United Nations Framework Convention on Climate Change. At that time it had dawned upon the \vorld that the thin layer of atmosphere enveloping the Earth was being turned into a dumping ground for combustion-generated gases, and that this dumping ground was about to overflow. Twenty years after the bestseller, Limits to Growth, brought the finiteness of natural resources lying deep in the bowels of the Earth in to the limelight, the international community was forced to acknowledge that the finiteness of natural sinks in the air might be more urgent. The limits of the sky, rather than the Earth, turned out to be the more pressing issue. By l997 an international treaty - the Kyoto Protocol - had been drawn up to define policy obligations for climate protection, and in 2005, after protracted international convulsions, the treaty acquired legal validity. As the 'entry into force' of the Kyoto Protocol is the beginning as much as the end of a historical process, it is advisable to look at some of the deeper implications of international climate policy, in particular at its implications for global fairness and equity.

At the time of the Rio Conference, it had already become clear that climate change is far from being just an ecological issue; it is also an issue of equity. In particular, climate change was identified as an issue of intergenerational equity. It became ominously clear to observers that global warming, since it modifies important parameters of the ecology of the planet, such as sea levels or weather patterns, will affect the relations between present and future generations. Today's generation, by filling up the absorptive capacity of the atmosphere, lives at the expense of tomorrow's generation. At the same time, it came to the fore that the use of fossil fuels not only affects inter-generational equity, but also intra-generational equity, i.e., the relations between nations and social groups within a generation. Who will be allowed to reap the benefits from fossil fuel combustion? Who will have to carry the burden of emission abatement? Equity within a generation has at least two dimensions (Wuppertal Institut, 2005). First, it implies the fair distribution of burdens and benefits of fossil fuel use among nations. Secondly, however, it also implies the universal protection of human dignity by securing the fundamental rights of every human person to water, food, housing, and health. The present article will focus on the latter dimension; it will explore the links between human rights and climate change, without, however, losing sight of the broader framework of equity in climate politics.

Two Dimensions of Equity

Social science inquiries into systems of human resource use normally start where natural science inquiries have left off. The latter, by focusing on the relations between humans and the conditions of the natural world, usually speak about humans only in general terms; indeed, they mostly treat humanity as a black box. The former, in turn, usually hold rather general notions about the natural world, but attempt to shed light on the relations that are formed between people and between nations as they use the environment. From this vantage point, how the balance of power and opportunities within humanity is affected by particular patterns of resource use is an essential question.

Who has the advantages and who the disadvantages when nature is used? This may be considered the key question of environmental justice; It takes off from the widespread observation that the benefits and the burdens of resource use often do not fall to the same social actor, but are unevenly spread across different regions and social groups. While some might be able to enjoy the benefits, others might be forced to shoulder the burdens. Economists are well aware of this divergence in effects; they speak about the 'internalization of positive effects' when an actor is able to seize the benefits of resource use, while they speak about the 'externalization of negative effects' when an actor is able to shift the burdens coming with a particular resource use to other social groups. However, this process has not only a biophysical, but also a social profile (Sachs, 2003). As organizations internalize benefits and externalize costs, societies are structured into winners and losers. Power relations ensure that positive consequences crystallize at the top end and negative consequences at the bottom end. This shifting of costs may take place in a temporal, spatial or social dimension: that is, costs may be shifted temporally from present to future, spatially from centre to periphery, and socially from upper classes to lower classes.

Two critical dimensions can be distinguished in the distribution of benefits and costs. They point to the two most important concepts of justice: human dignity and equality. Both dimensions differ in their starting point and in their conclusions. The demand for human dignity starts from the absolute necessity of certain living standards, and insists that these must be achieved for all, whereas the demand for equality focuses on relations among people and presses for the levelling out of inequalities. In other words, the dignity concept of justice rests upon a non-comparative approach that looks at the absolute provision of certain fundamental goods and rights, while the distributive concept of justice rests upon a comparative approach that looks at the proportional distribution of various goods and rights (Krebs, 2002). Both dignity and equality go to make up

the ideal of justice; therefore, any policy striving for equity will keep in mind both human rights issues and distributive issues.

The use of fossil fuels, as with any environmental resource, results in burdens as well as benefits. Issues of human dignity arise with regard to the distribution of dangers. Potential threats are not distributed equally across the globe; both developing countries and lower social classes are likely to be disproportionately affected, possibly to such a degree that fundamental rights might be violated. The IPCC (2001) has confirmed that developing countries are most at risk of climate change. Thus, under certain conditions, global warming may undermine people's right to a secure livelihood. Issues of distributive justice, in contrast, arise in particular with the unequal distribution of access to the atmosphere as a deposit for greenhouse gases. This is because emissions not only produce the burden of marginalization, they also produce the benefit of power, and the right to use the atmosphere as a dumping ground represents a source of economic power. Disparity in access leads to disparity in economic opportunities; it partitions the world society into winners and losers. Such a situation is unjust if it allows certain nations to maximize their freedom to flounsh at the expense of the freedom of others. Therefore, at the international level, equity calls for a rebalancing of opportunities among nations.

What rise of the global mean temperature can be tolerated? This question is technical in appearance, but highly political in reality. It hides fundamental issues of how to live together in an interconnected world. In particular, it decides about the human rights impact of anthropogenic climate change. As is well known, the United Nations Framework Convention on Climate Change calls for the stabilization of greenhouse gas concentrations at levels that, '...would prevent dangerous anthropogenic interference with the climate system' (Article 2). Such levels should be achieved, '...within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner'. Up to this date climate negotiations have refrained from defining what may constitute dangerous anthropogenic interference with the climate system (Hare, 2003). What kind of threat qualifies as 'dangerous'? Twenty centimetres of sea level rise or two meters? One degree rise in medium global temperature or three degrees? And in what time frame, in twenty years or in eighty years? Different impacts are associated with different levels of temperature rise; who will be affected, how, and to what extent largely depends on how far global warming is allowed to go.

In the end, however, it is a matter of political and ethical judgment to determine how much climate change is tolerable. This is not only because any assessment of risk implies a value judgment, it is also because the avoidance of a risk often implies missed opportunities, in the case of climate change, these are usually opportunities for economic growth. Moreover, most evaluations of the dangers will have to implicitly or explicitly confront the question: dangerous to whom? The potential cost associated with continuing to risk high levels of danger are of a different kind, and fall on a different set of people than the cost associated with avoiding dangerous change. Any decision on what is to be considered a dangerous level of impact is clearly a political and ethical issue. It basically implies two valuations: what kind of danger is acceptable, and what kind of danger is acceptable for whom? It is the response to the latter question that determines the degree of environmental injustice involved in climate politics.

Impacts

Estimating possible impacts of global warming on human communities is a notoriously difficult endeavour, for at least three reasons. First, most effects resulting from rising global mean temperatures affect people only indirectly; they may lead to changes in the conditions of ecosystems that in turn may impact conditions of human systems. ~While already different ecosystems are not equally affected by climate change, human communities exhibit an even wider range of vulnerability. They are exposed differently to changes in natural variables, depending, for instance, on if they are peasants or city dwellers. And they are capable of coping with adverse circumstances in different ways, depending, for instance, on if they are poor people without means or rich people with insurance policies. This diversity of settings renders general statements about causal relationships very problematic. Secondly, human development is not going to stand still over the rest of the century; there are, however, different development paths that societies - or the world as a whole, for that matter- can take. It is impossible to anticipate what development path will eventually prevail, regardless of any climate policy. But levels of atmospheric CO2 concentration will vary according to the development path chosen; the IPCC SRES scenarios, therefore, imply different impacts according to development paths. And thirdly, the vulnerability of human societies also varies according to development paths taken; for instance, the A- family of SRES scenarios generally leads to higher vulnerability than the B-family of scenarios. For these reasons, any sweeping affirmation about the impacts of global warming on people should be taken with caution; nevertheless, severe impacts are to be expected whose general patterns have emerged in recent research (IPCC, 2001; Exeter Conference, 2005). The most important impacts are likely to affect natural assets that underpin human existence - water, food, health.

With regard to water, it is important to note that currently 30 countries with a combined total population of over 500 million have less than 1000 m3 of renewable water available per capita per year; they are considered water-scarce, a condition which by the year 2025 is likely to affect some 50 countries with a combined population of about 3 billion (Shah et al., 2006). Projected climate change will exacerbate water shortage in many waterscarce areas of the world, though it will alleviate them in some other areas (IPCC, 2001). The hydrological cycle is expected to intensify, which essentially means more droughts and floods, and more variable and extreme rainfall. Generation-old patterns of rainfall may be shifting with corresponding consequences for plants, animals and people. Several hundred million to a few billion people are expected to suffer a water

supply reduction of l0% or more by the year 2050 for climate change projections corresponding to a 1% per year increase in CO2 emissions. Regions where water stress is likely to increase due to climate change include central and southern America, central and southern America, and the watersheds around the Mediterranean, while South and East Asia are likely to see an increase in water resources. (Arnell, 20043. Finally, too much of the wrong water can be dangerous as well. Rising sea levels obviously increase the risk of coastal flooding that could displace large numbers of people. Some of the most vulnerable regions are the Nile delta in Egypt, the Ganges-Brahmaputra delta in Bangladesh, and many small islands, such as the Maldives, the Marshall Islands, and Tuvalu.

Furthermore, climate change will leave its imprint on the conditions for food production across the globe. In temperate zones, small increases in temperature might boost yields for some cereals, while larger changes are likely to decrease yields. In most tropical and subtropical regions, potential yields are projected to diminish with most increases in temperature. For instance, damage to the world's major crops begins when daytime temperatures climb above 30°C during flowering. For rice, wheat, and maize, grain yields are likely to decline by 10% for every one degree C increase over 30°C (Halweil, 2005). If, in addition, there is also a large decrease in rainfall in subtropical and tropical dryland/rainfed systems, crop yields would be even more adversely affected. In tropical agricultural areas, yields of some crops are expected to decrease even with minimal increases in temperature (IPCC, 200l). In sum, 20-40 poor and food-insecure countries, with a projected population in 2080 in the range of 1-3 billion, may lose on average 10-20% of their production potential in cereals due to climate change (Fischer et al., 2002). Moreover, it is expected that the income of poor farmers will decline with a warming of 1.5-2°C above preindustrial levels. (Hare, 2003). In fragile rural areas, such a change will aggravate the fate of people that derive their livelihood from direct access to forest, grasslands, and water courses. In developed countries crop production, in contrast, is likely to benefit from climate change at least initially, compensating for the declines projected for developing countries. Thus while global production appears stable, regional differences in crop production are likely to grow stronger through time, leading to a significant polarization of effects, with substantial increases in the risk of hunger amongst the poorer nations, especially under scenarios of greater inequality (Parry et al., 2004). Declines in food production will most likely hit regions where many people are already undernourished, notably Africa.

Finally, as public health depends to a large extent on safe drinking water, sufficient food and secure shelter, climate change is bound to have a range of health effects (McMichael et al., 2003). On the first level, a shortage of freshwater caused by climate change will increase risks of water-borne disease, just as shortage of food will increase the risk of malnutrition. On the second level, climate change, via both a shift in background climate conditions and changes in regional climatic variability, will affect the spatial and seasonal patterns of the potential transmission of various vector-borne infectious diseases. With global warming, it is expected that there will be an increase in the geographic range of potential transmission of malaria and dengue - two vector borne infections, each of which currently affects 40- 50% of the world population. A rise in temperatures, for example, would result in an increased prevalence of malaria in higher altitudes and latitudes. Within their present ranges, these and many other infectious diseases would tend to increase in incidence and seasonality, although decreases would occur for some infectious diseases in some areas. The human-induced warming that the world is now experiencing is already causing 150,000 deaths and 5 million incidents of disease each year from additional malaria and diarrhoea, mostly in the poorest nations (Patz et al., 2005). However, in all circumstances actual disease occurrence is strongly influenced by local environmental and social conditions. On the third level, climate change will be accompanied by an increase in heat waves, often exacerbated by increased humidity and urban air pollution, which would cause an increase in heat related deaths and episodes of illness. The impact would be greatest in urban populations, particularly affecting the elderly, the sick, and those without access to air-conditioning. Furthermore, a reduction in crop yields and food production will predispose food-insecure populations to malnutrition, leading to impaired child development and diminished adult activity (IPCC, 2001).

Summing up these possible effects of global warming on sea levels, water availability, and the incidence of malaria, it has been estimated that in the case of greenhouse gas emissions that result in a global temperature rise of a rather moderate 2°C, by the year 2050 some 25 million additional people will be threatened by coastal flooding, 180 to 250 million by malaria, and 200 to 300 million by water shortages (Parry et al., 2001).

Human Rights

There has been injustice in the world ever since Cain killed his brother Abel. Similarly, the expulsion of people from their land, the assault on their physical well-being, and the withdrawal of their means of subsistence have always been standard instruments in the repressive exercise of power. But only since the middle of the 20th century have such ways of holding others cheap been thought to involve contempt for human rights. In the past, according to the age and the local circumstances, they may have been seen as violations of the ruler's duties, as infringements of rights and customs, as sins against God or as evidence of oppression. In today's world, however, there exists the international consensus that instances of humiliation and impoverishment have to be measured against the norm to guarantee the fundamental rights of every human person. By birthright, people are considered bearers of rights for protecting their dignity, regardless of their nationality or cultural affiliation. These rights are equal, i.e., everyone enjoys the same rights, they are inalienable, i.e., they cannot be forfeited, and they are universal, i.e., every human being is a holder of fundamental rights (Donnelly, 2003). Especially in an age of globalization, it is increasingly the discourse of human rights that sets the terms of reference for disputes over power and its victims.

Before the Second World War it was just states that could claim rights. The rights of persons were first recognized at the international level only with the Universal Declaration of Human Rights, in 1948. This may be seen as the juridical revolution in human rights (Ignatieff, 2001), which later was complemented by a revolution in their advocacy and enforcement. The legal breakthrough came after Nazi crimes and horrors - the worst imaginable disaster for the rule of law - had shown the depths to which a totalitarian raison d'État can lead. That experience gave rise to a codification of the basic political rights of each and every individual in the world vis-à-vis state power. Subsequently, the juridical revolution made further progress with the International Covenant on Civil and Political Rights and the International Covenant on Economic, Social and Cultural Rights (in force since 1976), and with the World Conference on Human Rights held in Vienna in 1993. Although symbolic politics have often seemed to be dictating the course of things, it has become dear over the years that even rhetorical affirmations can be a political weapon in the hands of the powerless. For this reason, what Ignatieff calls an 'advocacy revolution' has occurred in the 1980s and l990s. Groups belonging to international civil society – the best-known being Amnesty International and Human Rights Watch - have put various states in the dock for their violations of basic rights. In the name of human rights, numerous campaigns have begun to interfere in hitherto internal affairs of states. With the appointment in 1993 of a High Commissioner on Human Rights, the United Nations gave itself an instrument of its own to investigate excessive internal sovereignty claims on the part of various states. However, an 'enforcement revolution' can hardly be considered to have happened on a large scale. Nevertheless, such institutions as the International Courts of Justice in Arusha and The Hague, or the International Criminal Court set up in March 2003, demonstrate that a trend is under way which might make human rights violations justiciable, over and beyond the principle of state sovereignty. In any case, the three 'revolutions' mentioned have combined to give human rights greater prominence throughout the world.

For a long time, however, people's economic, social and cultural rights played a subordinate role in this growing legal awareness. This was largely due to the Cold War; for the Western bloc inscribed civil and political rights on its banner, while the Eastern bloc did the same with economic and social rights. The two sets of human rights were ritually played off against each other, with the result that social rights were taken no more seriously in the West than democratic rights were in the East. But meanwhile this confrontation has resolved itself, and the inseparability and interdependence of political and social human rights have been largely accepted (Steiner/Alston, 1996). Indeed, it would be hard to understand why disease or malnutrition should be less important than press censorship or religious persecution in affecting people's ability to act. Without social and economic rights, the minimum basis for equality of civil and political rights is lacking and, conversely, social and economic rights without civil and political rights are robbed of the motive power of freedom. A minimalist conception of human rights that refers only to negative political freedoms therefore discriminates against the have-nots and those whose livelihood is threatened; recognition of their dignity requires the protection of economic, social and cultural rights.

When human beings do not have the basic capability to support themselves with dignity, their human rights are under threat. Most societies regard as basic requirements: the capability to obtain adequate nourishment, to avoid unnecessary illness and premature death, to have adequate housing, to earn one's own livelihood, to be assured of physical safety, to have equal access to justice, to appear in public without feeling ashamed, and to take part in the life of a community [OHCHR, 2002]. The International Covenant on Economic, Social and Cultural Rights declares that 'the State Parties to the present covenant recognize the right of everyone to an adequate standard of living for himself and his family, including adequate food, clothing and housing ...' (Article 11) and 'the right to the highest standard of mental and physical health' (Article 12). Under the influence of this formulation - which echoes Article 25 of the Universal Declaration of Human Rights - the debate on development has changed its colour in the subsequent decades; overcoming hunger, illness, and misery is not seen any longer as a matter of charity or solidarity, but as a matter of human rights. The need-centred approach in development has thus been largely replaced by a rights-centred approach; moreover, it has also been adopted by leading international organizations, such as UNICEF, WHO, and UNDP.

Rights generate duties, but needs - in the best of cases - just compassion. Anyone who speaks of rights asserts that certain institutions and authorities have an obligation to give an account of themselves; the language of rights strengthens the power of the marginalized. First of all, of course, governments constitute the prime duty bearers in human rights law. Indeed, securing human rights should be the first priority of governments, as Article 1 of the Vienna UN Conference on Human Rights has affirmed. However, in a transnational world where the influence of states has become more and more circumscribed while the influence of corporations and multilateral institutions is on the rise, a case can be made that non-state actors will have to observe corresponding duties as well. It is, after all, difficult to imagine how there can be universal human rights without universal human duties. While the Universal Declaration limits itself to the allusion that 'everyone has duties to the community in which alone the free and full development of his personality is possible' (Article 29), the 'Declaration on Human Duties and Responsibilities', as it was proposed in 1997 under the auspices of UNESCO, is much more explicit: 'Members of the global community have collective, as well as individual duties and responsibilities, to promote universal respect for and observance of human rights and fundamental freedoms' (Declaration 1997).

It is remarkable that the text, speaking about members of the global community, is not simply referring to states, but also to transnational corporations, international organizations, associations, even to all communities of people, including the individual person. Indeed, things would look bad for human rights if only states continued to be considered duty bearers in a globalized world. Instead, as philosophers increasingly argue (O'Neill, 2000; Scheffler, 2001), all actors that exert power in a more and more border-less world carry responsibility for the protection of fundamental rights. The basic dignity of people is to be safeguarded against any form of denigrating power, regardless from whom and where it originates. For rights cannot be maintained universally, unless the duty of observing them is shared universally. In the end, it is nothing but the golden rule of ethics that underpins this conclusion, demanding that 'what you do not wish to be done to yourself, do not do to others'. As

interactions across borders intensify, rendering state borders ever more porous, this rule provides a minimum moral ground for the recognition of universal basic rights in the emerging world society.

Rights-Based Climate Policy

The bitter consequences resulting from climate change - in particular several decades from now - will spread across the globe, albeit in varying degrees. Even rich countries in temperate zones are not able to shield themselves against adverse impacts, as the 25,000 deaths caused by heat waves in Europe in the summer of 2003 have dramatically shown. Yet researchers converge on the general assumption that developing countries are most at risk of climate change, with damage at even low levels of warming and increasing rapidly with rising temperature (IPCC, 2001). Countries - and regions within countries - are disproportionately affected for basically two reasons: higher impacts and higher vulnerability. As indicated above, adverse impacts of climate change are likely to be more concentrated in areas of Africa, South America, and Asia. Impact profiles differ according to kind of impact and geography, but water stress and flooding, declining agricultural productivity and weakening ecosystem services, crop pests and human diseases are more likely to occur in subtropical and tropical countries, in coastal areas, and in arid and semi-arid agricultural areas. Higher vulnerability, however, derives from the fact that in many places at risk a great number of people already live under fragile conditions, economically and health wise. The ability to prepare for and to cope with threats varies widely according to income and living conditions. The impact of a hurricane in Orissa, for example, may be much more severe than the impact of a similar hurricane in Florida. Likewise, in 1999 there were two to three times more disaster events reported in the US than in India or Bangladesh, but there were 14 times and 34 times more deaths in India and in Bangladesh than in the US (UNEP, 2002). Wealth, technology, and infrastructure facilitate adaptation and the ability to cope. The poor generally tend to have much lower coping capacities; they are more exposed to disasters, drought, desertification, and slow economic decline.

Climate perturbations are likely to be superimposed on economic insecurity. As a consequence, climate impacts are at times likely to aggravate the living conditions of people up to a point where their basic rights are in jeopardy. It is for this reason that climate impacts may turn into a matter of human rights. As people already living at the edge see themselves pushed over into disaster, climate effects may trigger an infringement upon economic and social human rights. This is not to say that climate-related threats (hurricanes or heat waves, for instance) to human physical integrity under conditions of greater affluence may not constitute a human rights violation as well, but they are going to be more occasional and less structural in terms of their occurrence, just as they are going to be more accidental and less predictable in terms of their location. Impacts in poorer regions, in contrast, often add to an already structurally precarious livelihood situation; it is the compounded effect of economic insecurity and climate stress for large numbers of people that centres around the question of how much climate change should be allowed into a human rights issue.

However, climate-related human rights are matched only by imperfect, not by perfect duties. Like with most economic, social and cultural rights, the link between the right and the corresponding duty is blurred. Just as a violation of the right to food, health, or shelter, can often not be traced back to the action of a clearly identifiable duty-bearer, also climate effects cannot be attributed to a culprit with name and address. Who exactly should be held responsible for hunger and widespread illness? While it might be possible to identify the victims, it is often impossible to identify the responsible agent or the causal relationship between a specific action and a specific damage. In fact, an objection often raised against the concept of economic, social and cultural rights holds that rights make no sense unless they are combined with exact duties imposed on specified actors who would make sure that these rights are fulfilled. But the objection is flawed, for it militates against the basic idea that people have some claims on others and on the design of social arrangements regardless of what laws happen to be enforced (HDR, 2000). The absence of culprits or judges does not nullify rights. A strictly legal conception, which maintains that there are no rights unless they are justicable, misses out on the universalist nature of human rights entitlements.

Furthermore, climate rights call for extra-temtorial responsibility, even more so than do economic, social and cultural rights. Climate perturbations most clearly surpass the jurisdiction of single states, they are in fact a striking example for the transnational character of threats in a highly interdependent world. Under such circumstances, the human rights obligations of states and non-state actors cannot simply stop at territorial borders; rather, they reach geographically to other countries as well. As the Special Rapporteur to the Human Rights Commission on the Right to Food has recently stated: 'Governments must recognize their extra-territorial obligations towards the right to food. They should refrain from implementing any policies or programs that might have negative effects on the right to food of people living outside their temtories' (UNCHR, 2005). When the right to food is threatened by climate change, the principle of extra- territorial obligations becomes even more relevant, given that rich countries are largely responsible for climate perturbations in poorer countries. Just as climate effects reach to the ends of the earth, the geographical scope of responsibility has become global as well.

However, this responsibility is in the first place a negative one; it implies avoiding harmful action rather than intervening to provide conditions for an unmutilated life. In other words, climate responsibility is first of all a matter of self-limitation on part of high-emitting nations and social groups, not a matter of benevolent imperialism bent on improving the world. It is, incidentally, the liberal core of human rights law to emphasize negative obligations, i.e., to call on power-holders to refrain from actions that infringe upon people's integrity. Since institutions are nothing but consolidated systems of action, the human rights imperative can be reformulated by saying that social institutions - including, one might add, energy systems - should be shaped in such a way that they do. not structurally and permanently undermine fundamental rights (Pogge, 2002).

Under human rights law, governments are supposed to carry out a triple task with regard to the rights to food, health, and housing (Steiner/Alston, 1996). They are first and foremost obliged to respect these rights by avoiding violating them through state measures; they are further required to protect them against powerful third parties, such as industries or landlords; and they are, in the end, expected to fulfil them only through positive action by facilitating access to food, health or housing. It would follow to apply the same hierarchy of obligations to climate rights; the right to live in freedom from human-induced climate perturbations has first to be respected by avoiding harmful emissions nationally, it has, secondly, to be protected against third-party emissions of countries or corporations through international cooperation, and it has, thirdly, to be fulfilled by upgrading people's capability to cope with climate change through adaptation measures, such as dam building, resettlement, or land redistribution.

Mitigation and Adaptation

In 2005, the Inuit Circumpolar Conference filed a legal petition to the Inter-American Commission of Human Rights demanding that the US limit its emissions. This move on part of the people living in the Arctic represents the first legal case brought against a high-emitting nation in defence of economic, social and cultural human rights. The petition is based on both long-term projections and current experience (Watt-Cloutier, 2004). Scenarios project massive thinning and depletion of sea ice, with the result that ice-inhabiting marine species - seals, walrus, and polar bear - may be pushed to extinction by 2070-2090. And current experience shows that Inuit hunters run into growing difficulties in predicting weather conditions, the solidity of sea-ice, and the location of species to be harvested. Many indicators suggest that global warming is threatening the ability of Inuit to survive as a hunting-based culture.

From a human rights point of view, the classical policy responses to dangerous climate change, mitigation and adaptation, acquire an additional urgency. As to mitigation, human rights considerations need to enter into the definition of what constitutes dangerous climate change. They direct attention to the most vulnerable sections of the world population, suggesting a frame of evaluation that is consistent with the basic law that governs world society. However, negotiations at present fail to define a target of tolerable climate change that would sufficiently protect the fundamental rights of the most vulnerable people. The IPCC low concentration scenario results in a CO2 concentration of 450 ppm CO2 and a total greenhouse gas concentration equivalent to about double pre-industrial levels. This would produce a long-term temperature increase of about 2.5°C at the present best estimate of climate sensitivity (Hare, 2003). However, a survey of possible impacts (Exeter Conference, 2005) suggests that a target that avoids systematic threats to human rights would need to keep the global mean temperature increase below 2°C above pre-industrial levels. It is obvious that such a target calls for mitigation commitments far beyond the Kyoto Protocol.

One reason, however, for the neglect of a human rights approach so far is the prevalence of a utility-based framework of evaluation in climate research and politics (Rayner/Malone, 1998). In this framework, benefits of climate mitigation are weighed against its cost in order to optimize both the amount and the time of protection measures. Achieving optimal welfare on the national or global level is the overriding goal. Yet the focus on aggregate welfare is largely incompatible with a focus on rights. For a rights-based framework centres on individual, local or ethnic rights that are not to be violated even at the expense of the aggregate good. It concentrates on the distribution of advantages/disadvantages across single groups, not on the maximization of welfare at the collective level (Höffe, 1989). It is therefore immune against considerations like the one, for example, that the flooding of the Maldives might be a cost to be justified by the aggregate benefit of unhindered growth. The utility approach is all too often inclined to trade away rights for higher aggregate welfare, while human rights are clearly absolute rights; they cannot be traded for higher incomes or disregarded because of a majority opinion.

Finally, human rights considerations also call for vigorous measures to facilitate adaptation to unavoidable climate change. Inasmuch as mitigation is insufficient, the polluter-pays principle requires that high-emitting nations offer compensation for damages caused. In particular, in a human rights perspective they are obliged to prevent violations of economic, social and cultural rights by adequate protective measures. These may range from upgrading health care, to investments in construction, to the building of dams. Governments, however, have so far not been very forthcoming; only a levy on projects in the framework of the Clean Development Mechanism is earmarked for this purpose up to this date. In any case, there can be no doubt that the adherence of the more affluent countries to human rights principles will be put to a hard test as long as emissions remain at current levels.

Whose Atmosphere?

During climate negotiations, both developed and developing countries - apart from the Island States - have shown little interest in defining low danger emission caps. All parties disregard the fact that, when it comes to capping emissions, the choice is between livelihood rights and the desire for affluence. The task of keeping the temperature rise below 2°C appears too large and too threatening to the economic interests of consumers and corporations. In particular, it still seems to have escaped the attention of developing countries that climate protection is of the utmost importance for the dignity and survival of their own people. It is time they became protagonists of climate protection, because climate protection is not simply about crops and coral reefs, but fundamentally about human rights.

The Kyoto Protocol fails to live up to this challenge. It does not demand serious reductions from the North, nor does it include newly industrializing countries from the South. Nevertheless, for the second commitment period of the Kyoto process, an ecological breakthrough cannot be expected unless the South assumes commitments as well. In fact, current emissions from developing countries alone would already overstress the absorptive capacity of the atmosphere, even if all of the industrial countries were to vanish from the Earth by a stroke of magic (Ott et al., 2004). Without the participation of the newly industrializing countries, global climate protection is bound to fail.

At this point, however, fairness might become the only realistic option (Athanasiou/Baer, 2002). For it turns out that the human rights issue can probably not be solved without addressing the issue of an equitable distribution of benefits from fossil fuel use - the second dimension of climate equity. This is why developing countries will refuse to cooperate as long as they have reason to fear that reduction commitments on their part will consolidate the inequality among nations for eternity. They will perceive any request to cooperate as an attempt of the well-to-do to pull up the ladder by which the rich themselves have climbed to success and power. Saving the climate at the price of long-term inferiority is not an option for them. Indeed, why should countries such as India, Brazil or China enter an agreement that would constrain them for an undetermined period of time to emit fewer greenhouse gases than industrial countries? It is difficult to avoid the conclusion that without greater fairness between North and South all appeals for effective climate protection will be in vain.

Fortunately, the terrain for greater fairness among nations is not entirely unprepared. Already the Climate Convention of 1992 has underlined the significance of international distributive equity. As Article 3.1 states, 'The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the Parties of the developed countries should take the lead in combating climate change and the adverse effects thereof'. Only developed countries are expected to assume reduction commitments and financial burdens, while developing countries have just reporting duties. This unequal distribution of commitments arises from the unequal responsibility of countries for climate change. As it happens, industrialized countries are responsible for the bulk of carbon dioxide emissions in the past and in the present. Since 1800, approximately 80% of the rise in cumulative emissions is attributable to the industrialized countries; at present they are responsible for nearly 50% of global carbon dioxide emissions, yet the industrialized countries represent only 25% of the world population. In the light of this situation, only industrial countries are subject to reduction commitments under the Kyoto Protocol.

However, the way in which reduction commitments have been distributed among the industrial countries in Kyoto was a matter of accident and political shrewdness rather than systematic consideration. There is no explanation why, for instance, Australia, was granted a further rise in emissions of 8% while Japan was forced to reduce emissions by 6%. In any case, rules for the distribution of reduction commitments will be at the centre of attention the moment developing countries are expected to come onboard a governance system for climate protection. The atmosphere, however, belongs to nobody in particular and to everybody equally; in other words, the atmosphere is a global common good. In the future, who should be allowed to use it, and by how much? What principles should determine the fair distribution of the 'cake' that is available?

Among observers of the negotiations, this issue has been hotly debated for some time (Brouns, 2004). For instance, some put forth the grandfathering principle, according to which each nation has to accept equal reduction commitments, disregarding the present unequal distribution of emissions. However, as such a principle would maintain the global welfare gap; it can hardly be considered fair. Brighter prospects are offered by the capabilities principle that demands commitments according to the capability of countries to reduce emissions. Economically strong countries are expected to carry the bulk of the reduction load, regardless of how efficiently they use energy. This proposal may be fair, but it is ecologically counterproductive, as wasteful countries would enjoy an advantage. A third principle calls for a distribution of commitments according to the historical responsibility of countries for loading the atmosphere with greenhouse gases. Each country's obligation would be measured by its relative contribution to global warming. Indeed, in 1997 Brazil introduced a proposal along these lines to the climate negotiations; the issue of equity has been squarely on the agenda of environmental diplomacy ever since. Countries are expected to assume obligations according to their share of cumulative emissions, given that the ominous concentration of greenhouse gases in the atmosphere has been built up over 150 years. Such a scheme would place the biggest burden by far on industrial countries. However, it is doubtful to what extent responsibility can be assumed for actions that have been adopted in ignorance of their consequences. After all, the possibility of a greenhouse effect was known to just a handful of specialists before the 1980s.

The situation is different when it comes to the equal entitlement approach (Meyer, 2000). This calls for a framework that respects the principle of an equal per capita right to the Earth's atmosphere. Most other allocation schemes would repeat a colonial style approach, granting disproportionate shares to the North. If the use of a global common good has to be restrained through collective rules, it would violate the principle of equity to design these rules to the advantage of some and the disadvantage of many. The equal right of all world citizens to the shared atmosphere is therefore the cornerstone of any viable climate regime. Therefore, for the second commitment period of the Kyoto Protocol, a process should be initiated whereby each country is allocated emission allowances based on equal rights per capita. This is hard on the North, but not unfair, as in exchange for accepting the rule of egalitarianism in the present, industrial countries would not be held liable for emissions accumulated in the past.

Assuming an equal right to the Earth's atmosphere, broadly speaking it is possible to envisage different development paths for North and South. All countries are expected in the long run, to converge upon a similar level of fossil energy- use per

capita. The North will contract, while the South will expand towards a convergence with the North. Over-users will have to come down from their present level, while under-users are permitted to raise their present level, albeit at a gradient that is much less steep than the one industrial countries went through historically, levelling off at the point of convergence. However, the convergence of North and South on equal emission levels cannot be achieved at the expense of contraction, i.e., the transition to globally sustainable levels of emissions. Once again, sustainability gives rise to equity. Indeed, the vision of 'contraction and convergence' combines ecology and equity most elegantly; it starts with the insight that the global environmental space is finite, and attempts to fairly share its permissible use among all world citizens, taking into account the future generations as well.

REFERENCES

Arnell, Nigel W. (2004), Climate change and global water resources: SRES emissions and socio-economic scenarios, Global Environmental Change, Vol. 14, No. 1, April 2004, 31-52.

Athanasiou, Tom, Baer, Paul (2002), Dead Heat. Global Justice and Global Warming, New York: Seven Stories Press.

Brouns, Bernd (2004), Was ist gerecht? Nutzungsrechte an natürlichen Ressourcen in der Klima- und Biodiversitätspolitik, Wuppertal Paper No. 146, Wuppertal: Wuppertal Institute.

Declaration on Human Duties and Responsibilities (l997). To be found at: www.cdp-hrc.uottawa.ca/publicat/valencia.

Donnelly, Jack (2003), Universal Human Rights in Theory and Practice, Ithaca: Cornell University Press.

Exeter Conference (2005), Avoiding Dangerous Climate Change. A Scientific Symposium on Stabilisation of Greenhouse Gases, Exeter, 13 February, 2005 (www.stabilisation2005.com).

Fischer, Günther, Mahendra Shah and Harrij van Velthuizen (2002), Climate Change and Agricultural Vulnerability, Luxemburg: IIASA.

Halweil, Brian (2005), The Irony of Climate, World Watch Magazine, March/April, 18-23.

Hare, William (2003), Assessment of Knowledge on Impacts of Climate Change- Contribution to the Specification of Art. 2 of the UNFCCC, Expert study for the German Advisory Council on Global Environmental Change for the Special Report Climate Protection Strategies for the 21th Century: Kyoto and Beyond, Berlin: WBGU.

Höffe, Otfried (1989), Politische Gerechtigkeit, Frankfurt: Suhrkamp.

Ignatieff, Michael (2001), Human Rights as Politics and as Idolatry, Princeton: Princeton University Press.

IPCC (200l), Climate Change 2001. Synthesis Report, Cambridge: Cambridge University Press.

Krebs, Angelika (2002), Arbeit und Liebe. Die philosophischen Grundlagen sozialer Gerechtigkeit, Frankfurt: Suhrkamp.

McMichael, A.J. et al. (2003), Climate change and human health - risks and responses, Geneva: WHO/UNEP/WMO.

Meyer, Aubrey (2000), Contraction and Convergence. A Global Solution to Climate Change,Totnes: Green Books.

Office of the UN High Commissioner on Human Rights (OHCHR) (2002), Draft Guidelines: A Human Rights Approach to Poverty Reduction Strategies, Geneva.

O'Neill, Onora (2000), Bounds of Justice, Cambridge: Cambridge University Press.

Ott, Hermann et al. (2004), South-North Dialogue on Equity in the Greenhouse. A Proposal for an Adequate and Equitable Global Climate Regime, Eschborn: GTZ, www.wupperinst.orgldownload/l085-proposal.pdf

Parry, M.L, C. Rosenzweig, A. Iglesias, M. Livermore, G. Fischer (2004), Effects of climate change on global food production under SRES emissions and socio-economic scenarios, Global Environmental Change, Vol. 14, No. 1, April 2004, 53-67.

Parry, Martin et al. (2001), Millions at Risk. Defining Critical Climate Change Threats and Targets, Global Environmental Change 11 (2001), 3, pp. 181-183.

Patz, J.A., D. Campbell-Lendrum, T. Holloway, and J.A. Foley, Impact of Regional Climate Change on Human Health, Nature, 438, 310-317.

Pogge, Thomas (2002), World Poverty and Human Rights, Cambridge: Polity Press.

Rayner, Steve, and Elizabeth Malone (1998), Human Choice and Climate Change, Vol. 4, Columbus: Batelle Press.

Sachs, Wolfgang (2003), Environment and Human Rights, Wuppertal Paper No. 137, Wuppertal: Wuppertal Institute.

Scheffler, Samuel (200l), Boundaries and Allegiances. Problems of Justice and Responsibility in Liberal Thought, Oxford.

Shue, Henry (l980), Basic Rights. Subsistence, Affluence and U.S. Foreign Policy, Princeton: Princeton University Press.

Steiner, Henry J., Alston, Philip (eds.) (1996), International Human Rights in Context: Law, Politics, Morals, Oxford: Oxford University Press.

UNCHR (United Nations Commission on Human Rights) (2005), Rapport of the Special Rapporteur on the Right to Food, Jean Ziegler, 24 January 2005, E/CN.4/2005/47.

UNDP (United Nations Development Programme) (2000), Human Development Report 2000, Oxford: Oxford University Press.

UNEP (United Nations Environment Programme) (2002), Global Environment Outlook 3, London: Earthscan.

Watt-Cloutier, Sheila (2004), Climate Change and Human Rights. www.carnegiecouncil.org/viewMedia.php/prrmID/4445.

Wuppertal Institut (2005), Fair Future. Begrenzte Ressourcen und globale Gerechtigkeit, München: C.H. Beck.